Remarks/Arguments

The Examiner has rejected Claims 1-4 and 6-10 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The Examiner appears to have misunderstood the factual circumstances surrounding the deposit of the microorganism strains.

Two separate microorganism deposit were made, the first on March 18, 1999, under the deposit number NCIMB41013, and the second on March 29, 2000, under the deposit number NCIMB41042. Copies of the papers relating to both deposits are enclosed herewith, for the avoidance of misunderstanding.

Both deposits were of a microorganism which produces an enzyme which fulfills the test set forth in Claim 1 of the present application, i.e., an enzyme capable of enantioselective hydrolysis of 3-azatricyclo[4.2.1.025]non-7-en-4-one and 7-azabicyclo[4.2.0.]oct-4-en-8-one.

The reason that the second deposit (NCIMB1042) was made is that it was discovered subsequent to the making of the first deposit that the active organism in the deposit was incorrectly identified as Pseudomonas putida, rather than as Rhodococcus globerulus.

This error of identification had, however, been clarified by the date of the second deposit. Any enquiry with NCIMB from that date would establish that the strain in question was, in fact, Rhodococcus globerulus, not Pseudomonas putida, and that the specification therefore contained an obvious error. Even before the date of March 29, 2000, it was clear that the particular for which protection was sought is the strain which was deposited on March 31, 1999. The active constituent of that deposit was a matter of fact, which is unaffected by the error in nomenclature.

The applicant does not seek to change the nature of the strain used in the claimed process. The strain has always been the same, namely that which was deposited with NCIMB. The applicant seeks only to correct the description of that strain which appears in the application.

For the reasons given above, there can also be no question that the invention as defined in Claim 1 met the requirement sufficiency of disclosure, both at the filing date of the PCT application, and at the priority date of 31st March 1999. Accordingly, applicant respectfully requests reconsideration of the rejection.

Claims 1-4 and 6-10 have further been rejected under the written description requirement of 35 U.S.C. 112.

The Examiner maintains that the written description of the claimed enzymes requires more than a mere statement that they are part of the invention and reference to a potential method for isolating them. Supporting the Examiner's rejection is the contention that the specification has no evidence on the record that any enzyme was isolated. Rather, the Examiner argues that the specification describes only a

microorganism or cells of a microorganism have been employed as a biocatalyst. Applicant respectfully traverses the Examiner's rejection.

Contrary to the Examiner's contention, the written description provided in the specification is completely consistent with the state-of-the-art for isolation and identification of enzymes from microorganisms. The Examiner states that a mere recitation of the means of isolation for a given enzymes which identifies a single microorganism from an assay of more that 96 strains shows no proof that the described enzyme was isolated. In fact, this is a very clear and well-recognized means for isolating a specific enzyme. Enzymes are proteins that catalyze innumerable reactions within the cells of millions of biological organisms. Many of these enzymes are identified and claimed based on a description of chemical elements that comprise them. However, such a description is in fact, inadequate, because it fails to describe the conditions under which the enzyme is operating. These conditions affect such critical requirements for enzymatic activity as folding of the protein. Contrary to such an inadequate description, Applicant has identified the specific organisms and the particular reaction conditions under which the enzymes of the invention function in the claimed process. Any practitioner skilled in the art can quickly and easily isolate the enzyme of the claimed process based on the written description.

The Court of Appeals for the Federal Circuit has affirmed their position as to an inventor's possession of the invention in Moba, B.V., Staalkat, B.V., and FPS Food Processing Systems, Inc. v. Diamond Automation, Inc., 325 F.3d 1306, 66 U.S.P.Q. 2d 1429 (CAFC 2003). In that case, the CAFC stated that "The test for compliance with §112 has always required sufficient information in the original disclosure to show that the inventor possessed the invention as the time of the original filing." Id. at 1320. Citing its own decision in Amgen, Inc. v. Hoechst Marion Rousel, Inc. 314 F.3d 1313, 65 U.S.P.Q. 2d 1385 (CAFC 2003), the court stated:

> "More recently, in Enzo Biochem, we clarified that Eli Lilly did not hold that all functional descriptions of genetic material necessarily fail as a matter of law to meet the written description requirement; rather, the requirement may be satisfied if in the knowledge of the art the disclosed function is sufficiently correlated to a particular, known structure."

Amgen, 314 F.3d at 1332.

Accordingly, Applicant respectfully asserts that recitation of the means of isolation of the enzyme of the claimed invention is, in the knowledge of the art, sufficiently correlated to a particular, known structure. Applicant respectfully requests reconsideration of the Examiner's rejection.

The Examiner rejected Claim 10 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Applicant respectfully traverses the Examiner's rejections or reasons stated above with respect to the rejections under the ennoblement requirement of 35 U.S.C., first paragraph.

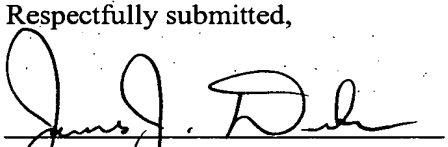
The Examiner rejected Claims 1-4 and 6-10 under 35 U.S.C. 102(b) as anticipated by WO 92/18477 or, in the alternative, under 35 U.S.C. 103(a) as obvious over WO 92/18477. As is described in the present application at page 3, line 21 to page 4, line 3, this reference discloses the use of an enzyme derived from Rhodococcus equi to transform racemic ß-lactams, giving one enantiomer as untransformed lactam, and the other as hydrolysis product (amino acid). The particular enzyme employed is, however, highly inefficient (as is explained at page 4, lines 1 to 3 of the present application).

Applicant has established and elucidated a test, which is able to ascertain in a simple and unambiguous way those enzymes (or more specifically, the microorganisms which produced them) which are suitable for use on an economic scale. The test is that set out at page 4, lines 8 to 20 of the application, namely that the material is capable of the enantioselective hydrolysis of racemic lactams of the formulae 2 and 3.

There is no suggestion in WO 92/18477 of such a test, nor is there any suggestion of how a commercially acceptable biocatalyst material might be prepared. The materials reported in WO 92/18477 do not satisfy the test set out in the present application.

Given these remarks and arguments, Applicant respectfully requests that the allowance of Claims 1-4 and 6-10 be reconsidered.

Respectfully submitted,



James J. Drake
Registration No. 34,584
Phone: 989-636-8449

P. O. Box 1967
Midland, MI 48641-1967

JJD/ksb

Experimental Report – EP009189984.6

The microorganism strain disclosed in WO92/18477 (Rhodococcus equi Enza-1 deposited as NCIMB 40213) was subjected to the screening test described in Example 1 of EP009189984.6, alongside the strain NCIMB 41042 employed in the application.

In the screen for activity against 3-azatricyclo[4.2.1.0.^{2,5}]non-7-en-4-one [the norbornadiene lactam (**2**) derivative], the NCIMB 41042 strain gave approximately 45% substrate conversion. Under the same conditions the NCIMB 40213 strain was essentially inactive. Conversion was recorded at 0.3%, this figure being no greater than background signals of the HPLC assay as described in Example 1.

Philip Keene
April 2003